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[54] **METHOD AND SYSTEM FOR COMPRESSING VIDEO DATA**

[75] Inventors: **Stuart T. Laney**, Seattle; **Eric Ledoux**, Redmond; **David M. Maymudes**, Seattle; **Daniel J. Miller**, Redmond, all of Wash.

[73] Assignee: **Microsoft Corporation**, Redmond, Wash.

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[58] **Field of Search** 348/420, 422, 348/409, 415, 417, 418; H04N 7/130

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Primary Examiner—Howard W. Britton
Attorney, Agent, or Firm—Seed and Berry

[57] **ABSTRACT**

A method for compressing video movie data to a specified target size using intraframe and interframe compression schemes. In intraframe compression, a frame of the movie is compressed by comparing adjacent pixels within the same frame. In contrast, interframe compression compresses by comparing similarly situated pixels of adjacent frames. The method begins by compressing the first frame of the video movie using intraframe compression. The first stage of the intraframe compression process does not degrade the quality of the original data, e.g., the method uses run length encoding based on the pixels' color values to compress the video data. However, in circumstances where lossless compression is not sufficient, the method utilizes a threshold value, or tolerance, to achieve further compression. In these cases, if the color variance between pixels is less than or equal to the tolerance, the method will encode the two pixels using a single color value—otherwise, the method will encode the two pixels using different color values. The method increases or decreases the tolerance to achieve compression within the target range. In cases where compression within the target range results in an image of unacceptable quality, the method will split the raw data in half and compress each portion of data separately. Frames after the first frame are generally compressed using a combination of intraframe and interframe compression. Additionally, the method periodically encodes frames using intraframe compression only in order to enhance random frame access.

74 Claims, 14 Drawing Sheets

First Byte	Second Byte	Third Byte	Fourth Byte	Meaning/ Explanation
0	0	Not Applicable	Not Applicable	End of Line
0	1	Not Applicable	Not Applicable	End of Bitmap
0	2	Horizontal Offset (0-255)	Vertical Offset (0-255)	Delta; Escape Sequence 00, 02 Represents a Delta, the Two Bytes that Follow Represent Horizontal and Vertical Positioning Information; Used Only for Deltas Having a Non-Zero Vertical Offset or a Horizontal Offset Greater than 14
1-14	Not Applicable	Not Applicable	Not Applicable	Horizontal Delta of Magnitude Less than 15 Pixels
Length of Run (15-255)	Color Index (0-255)	Not Applicable	Not Applicable	Run Length Encoding; the First Byte Represents the Length of the Run (the Invention Obtains the Actual Length by Subtracting 14 from the Encoding Value); the Second Byte is the Run's Color Index
0	# of Absolutely Encoded Pixels (3-255)	Color Index (0-255)	Not Applicable	Absolute Encoding; the First Byte, 00, is an Escape Code; the Second Byte, Ranging From 3-255, Represents the Number of Bytes that Follow, Each of Which Contains the Color Index of a Single Pixel